

#### GEOTECHNICAL LEVEE EVALUATIONS PROGRAM

FloodSAFE Stakeholder Briefings June 2008

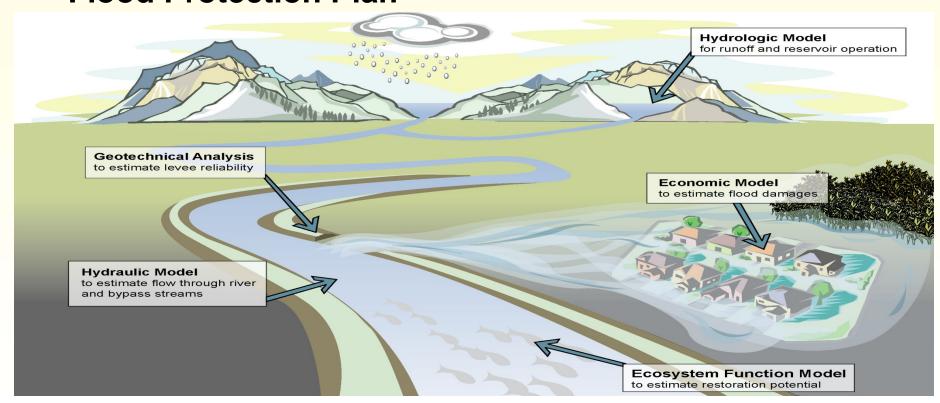
Hamid Bonakdar
California Department of Water Resources





#### Purpose of Geotechnical Levee Evaluations Program

- Identify geotechnical deficiencies
- Provide remedial alternatives and cost estimates for local flood management efforts and Central Valley Flood Protection Plan

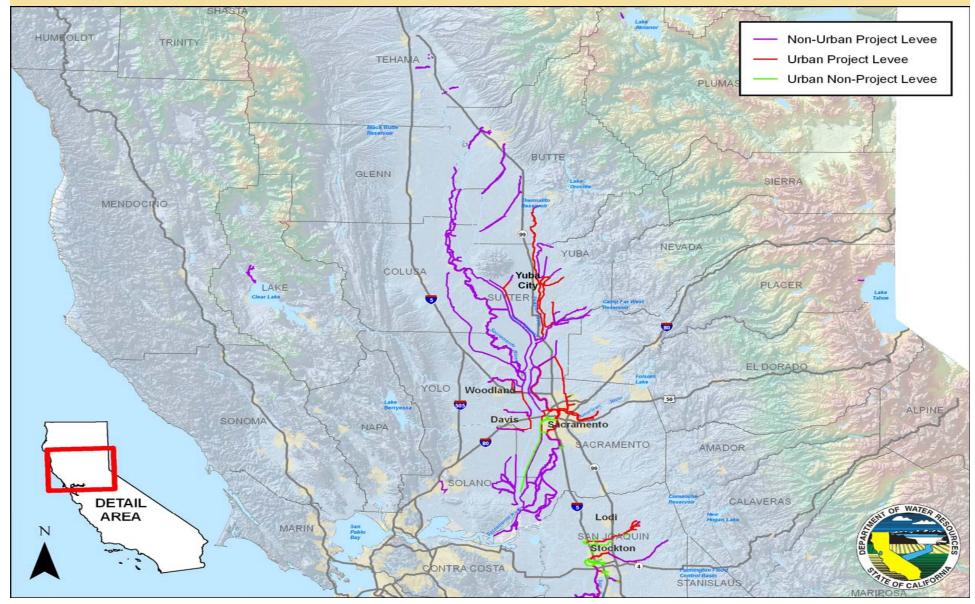




#### Overview of Geotechnical Levee Evaluations Program

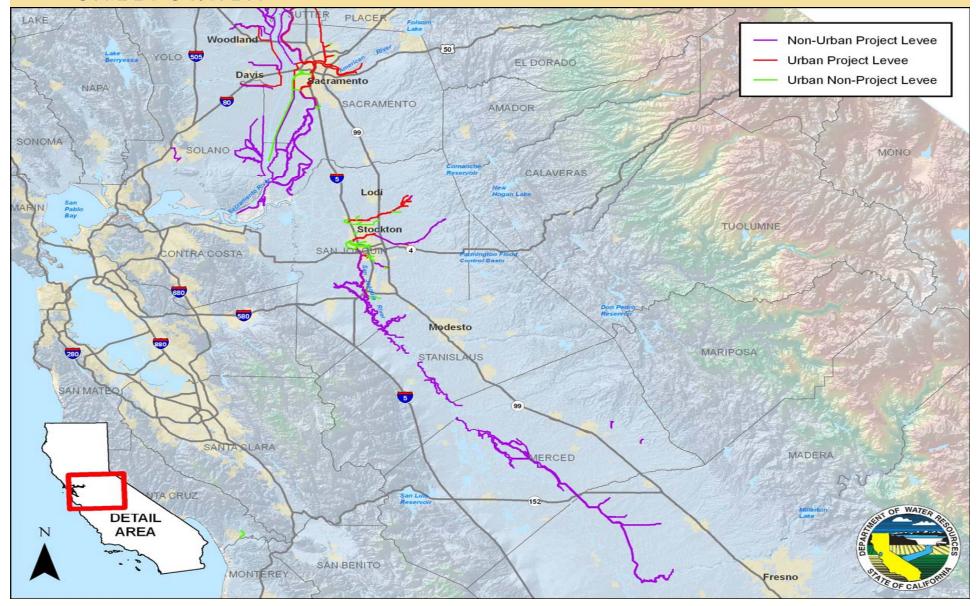
- Supports Central Valley Flood Protection Plan
- Urban Levee Evaluation Project
  - Protect populations of more than 10,000 people
  - 350 miles of State/federal project urban levees
  - Approximately 120 miles of non-project urban levees
  - Governor's 2006 Emergency Declaration
- Non-Urban Levee Evaluation Project
  - Strategy development
  - 1250 miles of State/federal project non-urban levees
  - Protect Small communities 10,000 or less people

## Flood SAFE CALIFORNIA



Levees under study

## Flood SAFE CALIFORNIA



Levees under study



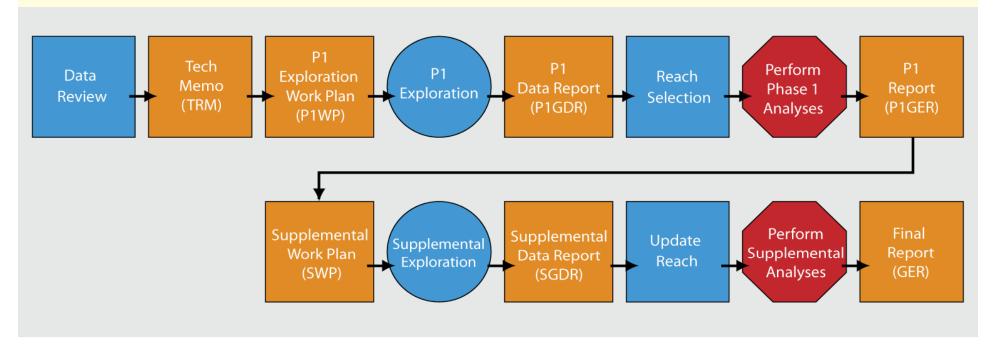
### General Technical Approach

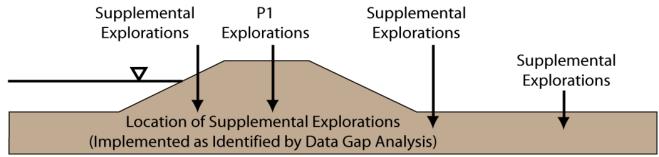
- Literature and background research (Locals, USACE, DWR, Consultants)
- Geomorphology
- Surveying
- Geophysical
- Exploration
- Testing
- Analysis
- Problem Identification
- Remedial alternatives and costs





#### Phased work flow for levee evaluations

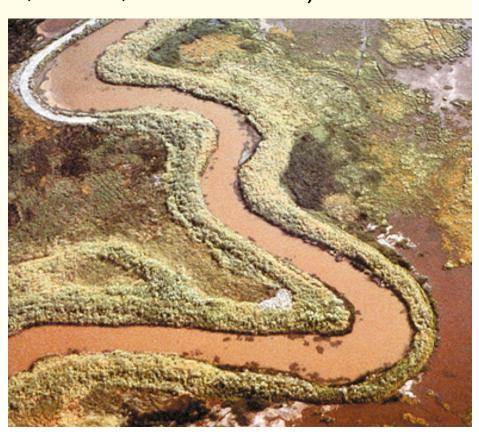






# First Year Work Non-Urban Levee Evaluations

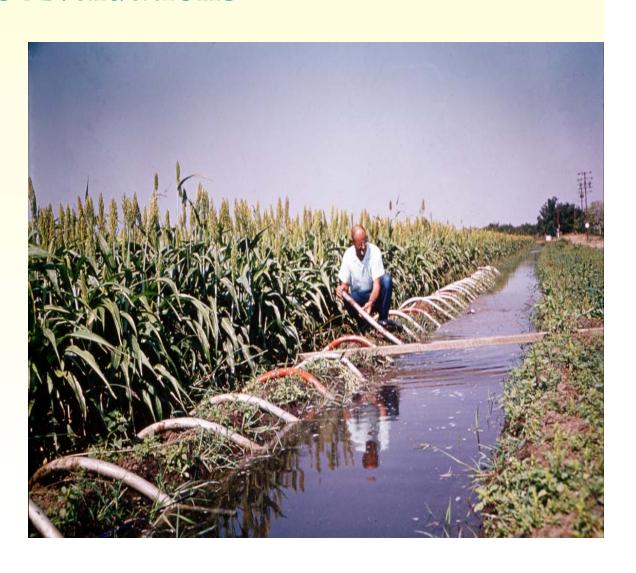
- Stakeholders briefing
- Literature search (Locals, USACE, DWR, Consultants)
  - Past Borings
  - As-Builts
  - Boils, Seeps, and Penetrations
  - Geotechnical Reports
  - Past Surveys
  - Photos





# First Year Work Non-Urban Levee Evaluations

- Interview LMA
- Geomorphology
- Surveying
- Hydrology & Hydraulic
- Strategy Development
- Stakeholders outreach





## Geomorphology

## **Geophysical Surveys**



Marysville, CA

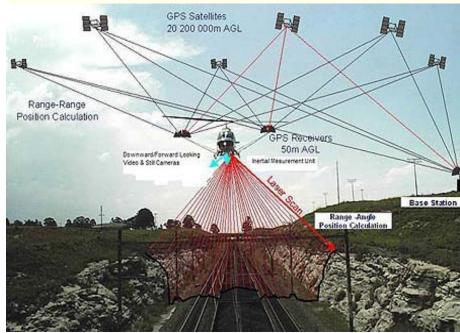
Helicopter Electromagnetic (HEM)

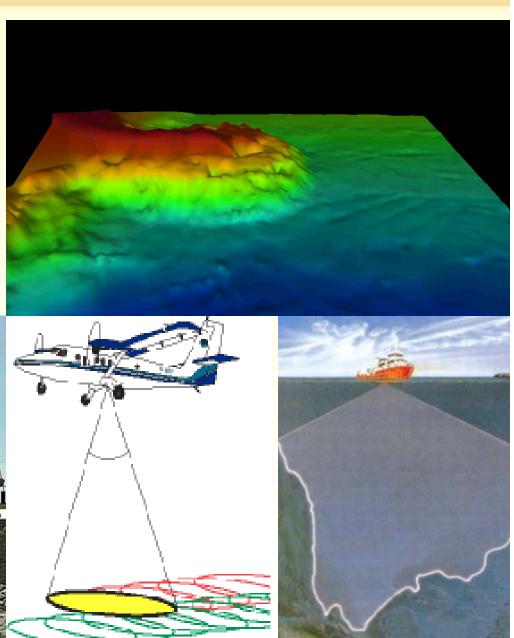


### Surveys

- Traditional land survey
- LiDar Light Detection and Ranging
- Bathymetry Multibeam echosounder

Datum: NAVD88 and NAD83







## Independent Consulting Board

#### **Charge:**

Provide independent, expert review of geotechnical policies and procedures with regard to safety, performance, state-of-practice and economy

#### **Board Members:**

- Chris Groves (Shannon & Wilson)
- Ray Seed (UC Berkeley)
- George Sills (formerly USACE, ERDC)



### **Concluding Remarks**

- Urban evaluation 40 percent complete
- Initiating non-urban evaluation
- Collaboration of DWR, USACE, local stakeholders and consultants, coordinated through Central Valley Flood Protection Plan process
- Process and strategy still evolving
- Unprecedented scope



## Questions?